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CALIFORNIA DIVISION OF MINES AND GEOLOGY

Fault Evaluation Report FER-49

June 16, 1977

1. Name of fault: Springville fault.

2. Location of fault: Camarillo and Santa Paula 7.5 minute quadrangles, Ventura County (see figure 1).

3. Reason for evaluation: Part of a ten-year program.

4. List of references:

a) Jennings, C.W., 1975, Fault Map of California with locations of volcanoes, thermal springs and thermal wells: California Division of Mines and Geology, California Geologic Data Map Series, Map no. 1, scale 1:750,000.

b) Pasta, Dave, 1958, Geology of the Las Posas-Camarillo Hills area, Ventura County, California: unpublished M.A. thesis, University of California, Los Angeles.
Note: Map missing from thesis.

c) Mukae, M.M., and Turner, J.M., 1975, Ventura County resources management study, geologic formations, structures and history in the Santa Clara-Calleguas area in Compilation of technical information records for the Ventura County cooperative investigation: California Department of Water Resources, v. 1, p. 1-28, 2 plates.

d) Page, R.W., 1963, Geology and ground water appraisal of the Naval Air Missile Test Center area Point Mugu, California: U.S. Geological Survey Water-Supply Paper 1619-S, 40 p., plate 1, map scale 1:31,680.

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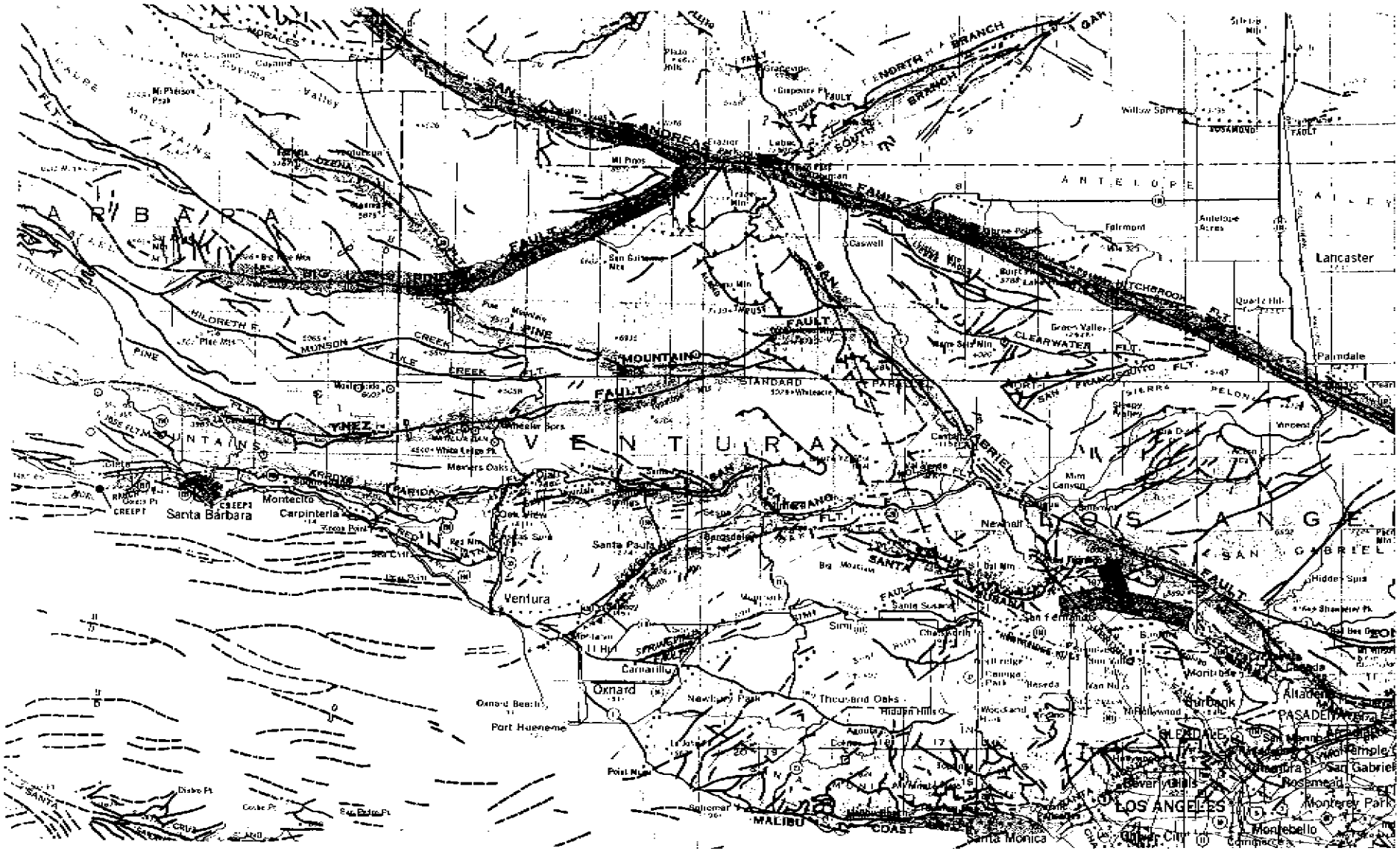
FIGURE 1. General location of the Springville faults (Jennings, 1975).



e) Turner, J.M., 1975, Ventura County water resources management study, aquifer delineation in the Oxanrd-Calleguas area, Ventura County in Compilation of technical information records for the Ventura County cooperative investigation: California Department of Water Resources, v. 1, p. 1-45, 10 plates.

f) Turner, J.M., and Mukae, M.M., 1975, Ventura County water resources study, effective base of freshwater reservoir in the Oxnard-Calleguas area in Compilation of technical information records for the Ventura County cooperative investigation: California Deaprtemnt of Water Resources, v. 1, p. 1-15, 1 plate.

g) Weber, F.H., Jr., Cleveland, G.B., Kahle, J.E., Kiessling, E.F., Miller, R.V., Mills, M.F., Morton, D.M., and Cilweck, B.A., 1973, Geology and Mineral resources study of southern Ventura County, California: California Division of Mines and Geology, Preliminary Report 14, 102 p., 5 plates, 9 figures, map scale 1:48,000.

h) Weber, F.H., Jr., Kiessling, E.W., Sprotte, E.C., Johnson, J.A., Sherburne, R.W., and Cleveland, G.B., 1975, Seismic hazards study of Ventura County, California: California Division of Mines and Geology, Open File Report, 76-5LA, 396 p., 9 plates, map scale 1:48,000.

i) Ziony, J.I., Wentworth, C.M., Buchanan-Banks, J.M., and Wagner, H.C., 1974, Preliminary map showing recency of faulting in coastal southern California: U.S. Geological Survey, Miscellaneous Field Studies Map MF-585, 15 p., map scale 1:250,000, 3 pl.

5. Summary of available data:

The Springville fault is actually a zone of two (or more) parallel faults (Pasta, 1958, p. 43; Mukae and Turner, 1975, p. 18). Pasta felt that the Springville zone may be a sub-alluvial extension of the Simi fault (see FER-48). He described the Springville as a nearly vertical zone with 200 feet of vertical separation, north side elevated realtive to the south side. Weber, et al. (1975, p. 175) referred to the Springville "fault" as a part of the "Simi Zone", noting that most of the faults in the zone were reverse, dipping 70 degrees to 80 degrees northward. (based on sub-surface data, probably)

Most authors agree that the Springville faults have displaced the San Pedro Formation (Plio-Pleistocene) (Pasta, 1958, p. 45; Mukae and Turner, 1975, p. 18; Turner, 1975, p. 26; and Page, 1963, plate 1). Most also agree that the base of ground-water is offset (base of the San Pedro Fm.) (Turner and Mukae, 1975, p. 8; Mukae and Turner, 1975, p. 18; and Weber, et al., 1975, p. 182-183). Turner (1975, p. 26) calculated that 250 feet of vertical displacement has occurred along the Springville zone since the deposition of the San Pedro Formation. Weber, et al. (1975, p. 175) indicates that late Quaternary, ground-water-bearing sediments are displaced by the Springville fault, and Zlony, et al. (1974) apparently agrees. However, Mukae and Turner (1975, p. 18) note that "It has not been proven that the Springville fault zone affects the movement of water in the Oxnard aquifer on the Oxnard Plain." Weber, et al. (1975, p. 227) ~~note~~ state that the Oxnard aquifer is the earliest Holocene unit in the area and occurs at a depth of from about 240 to 390 feet below the surface.

No one describes the appearance of the faults in outcrop.

6. Interpretation of air photos: Not attempted.

7. Field observations: Not attempted.

8. Conclusions:

The Springville fault appears to be a north-dipping, reverse fault, with 250 feet of vertical displacement on it since the Plio-Pleistocene. The faults appear to have been active during the late Pleistocene, but no Holocene displacement has been proven (Mukae and Turner, 1975, p. 18), *therefore the fault is not known to be sufficiently active*. Whether the fault is or is not well-defined cannot be determined from the literature, *however one of the traces is entirely a sub-surface fault (probably not well-defined).*

9. Recommendations:

Based on the data summarized herein, *and the present project guidelines,* the Springville fault zone should not be zoned at this time. More work could be done on the fault, however, the chance of finding any new data that would indicate the fault to be a Holocene fault is quite remote.

10. Investigating geologist's name; date:

Theodore C. Smith
THEODORE C. SMITH
Assistant Geologist
June 16, 1977

I agree with recommendations.
EHK
6/17/77